

Mr. Frederick P. Fish, with whom *Mr. J. L. Stackpole* and *Mr. H. F. Lyman* were on the brief, for petitioner.

Mr. Melville Church for respondent.

MR. JUSTICE SANFORD delivered the opinion of the Court.

This is a suit in equity brought by the Thomson Spot Welder Company in a Federal District Court in Michigan for the infringement of United States patent No. 1,046,066 for improvements in electric welding, issued December 3, 1912, to the plaintiff's predecessor in title, as assignee, upon an application filed by Johann Harmatta, December 3, 1903. The chief defenses were anticipation, lack of invention, prior public use, and estoppel. The District Court sustained all of these defenses, and dismissed the bill. 268 Fed. 836. The Circuit Court of Appeals—one judge dissenting—held the patent invalid for lack of invention, and, without considering the other defenses, affirmed the decree of the District Court. 281 Fed. 680. On account of a conflict with a prior decision of the Circuit Court of Appeals for the First Circuit, in *Thomson Electric Welding Co. v. Barney & Berry*, 227 Fed. 428, in which the patent had been held to be valid, this writ of certiorari was granted. 260 U. S. 718.

In the present case both the District Court and the Circuit Court of Appeals have held that Harmatta's improvement involved merely the exercise of mechanical skill and not invention. The question whether an improvement requires mere mechanical skill or the exercise of the faculty of invention, is one of fact; and in an action at law for infringement is to be left to the determination of the jury. *Keyes v. Grant*, 118 U. S. 25, 36, 37; *Holmes v. Truman* (C. C. A.), 67 Fed. 542, 543; *Hall v. Wiles* (C. C.), 2 Blatchf. 194, 11 Fed. Cas. 280, 283; *Poppen-*

husen v. Falke (C. C.), 5 Blatchf. 46, 19 Fed. Cas. 1052, 1054; *Shuter v. Davis* (C. C.), 16 Fed. 564, 566; *Blessing v. Copper Works* (C. C.), 34 Fed. 753, 754. Ordinarily, therefore, the case would call for the application of the well settled rule that the concurrent findings of the lower courts on questions of fact will be accepted by this Court unless clear error is shown. *Wright-Blodgett Co. v. United States*, 236 U. S. 397, 402; *United States v. State Investment Co.*, 264 U. S. 206, and cases there cited. We think, however, that this rule should not be strictly applied in cases brought here because of a conflict of decision in the different circuit courts of appeal, and have therefore given consideration to the question as to which of the decisions upon this question of fact, in the light of the prior art, is based upon the sounder reasoning. At the outset it is to be noted that in the First Circuit there was not a concurrent finding on the question of patentability; the District Court having found, as did the two courts in the present case, that the patent was invalid for want of invention. 227 Fed. 428, 433.¹

Welding is the art, practised immemorially, of uniting two pieces of metal in one piece by heating those portions which are to be welded to a temperature at which they become plastic and then pressing them strongly together so as to effect a union; as exemplified by a blacksmith when heating in a forge the two pieces to be welded and hammering them together.

The art of electric welding, which was invented in 1886, was well advanced when Harmatta filed his application, having been disclosed in various prior patents for uniting the abutting ends of metal bars, wires, etc., uniting the over-lapped edges of metal sheets, plates, etc., and other purposes.

¹ The opinion of the District Court is published with that of the Circuit Court of Appeals.

The patent in suit relates to that branch of electric welding known as spot welding, by which two sheets or plates are welded together face to face, in spots, as a substitute for riveting; this being accomplished by placing the two sheets between two pointed electrodes applied to their exterior surfaces, opposite to one another, which heat the sheets to the welding temperature and exert the required pressure in the line between the points of the electrodes, resulting in welding together the inside faces of the sheets in the spot on that line.

The reasons for which the petitioner claims that this improvement is patentable are thus summarized in its brief: "Harmatta produced a new result, namely a small round weld (a spot weld) uniting two plane sheets of metal at any place in their meeting faces. This was radically new . . . 2. To make this spot weld Harmatta manipulated the articles with which he dealt, namely the sheets, in a new way by indiscriminately superimposing one upon the other and he made his electrodes perform a function, which no electrodes, used in electric welding, had ever before performed. 3. In so doing he carried out a new technical process, that is, the electric current, which generates the welding heat, behaved and operated in an entirely new way, . . . and he applied the welding pressure to a condition, which seemed to make such application impossible."

The opinions of the two District Courts and of the Circuit Court of Appeals for the Sixth Circuit holding that the patent in suit was lacking in invention, are based, in each instance, on a detailed and analytical consideration of the prior art. We take the following extracts from the well considered opinion of the Circuit Court of Appeals:

"The art of electric resistance welding was old and far advanced in 1903, when the Harmatta patent was applied for. Prof. Elihu Thomson . . . was a pioneer in

that art. In 1886 he obtained process and apparatus patents . . . for so-called butt welding, which involved the uniting of the abutting ends of metal wires, bars, etc., by applying heat at the joint and the adjacent surfaces by means of electrodes, and pressing the two pieces together when heated to welding temperature. There was here true resistance welding, with pressure of the parts involved, although the electrode did not exert the welding pressure. In 1889 Thomson obtained a patent . . . for electric riveting, which involved the heating of the rivet when in place by means of a current passed through it by the use of electrodes, under pressure thereon, the effect being not only to swage the rivet and weld it to the adjoining metal, but apparently (when desired) to weld together, in part at least, the portions of the plates immediately adjoining the rivet. In 1891 Thomson obtained a patent . . . for what is called lap-welding. While the specification states that the invention is specially adapted to the welding of the overlapped edges of plates, it . . . expressly includes 'welding together strips, sheets, plates, or bars of metal where it is desirable to form a joint of considerable length.' According to the specification, 'the surfaces to be welded are pressed together to form a union,' the work being fed in the longitudinal direction of the joint 'through suitable pressure devices (preferably roller electrodes), the work being properly arranged, so that the pressure devices will press the surfaces to be welded together and simultaneously passing the electric current through the work *at the point of pressure.*' The electrodes were employed to exert the welding pressure. The specification further states that 'as the work is passed through such rolls with a continuous motion *each point*, as it comes between the rolls, is heated and the surfaces pressed together.' . . . In 1893 Thomson obtained a patent . . . relating particularly to soldering sheet metal pieces flatwise, either

by the use of solder or (when applied to tin plates) by melting the tin sufficiently to establish union thereby. The electrodes, in the form of clamps or otherwise, served not only to supply the necessary heat, but to exert sufficient pressure upon the overlapped sheets to effect their union. A roller electrode is disclosed, performing the double function of heating and pressing, and having its periphery corrugated or grooved . . . This was, to say the least, electric resistance spot soldering. In 1897 Robinson received a patent . . . on so-called projection welding, as specially applied to the welding of a splice bar to the web of a railroad rail, the splice bar having upon its inner face a number of projections which by the application of the heating current are fused, and by pressure made to form welds between the projections on the bar and the fused opposing portions of the rail. Kleinschmidt, in 1898, took out a patent . . . for a similar process, and by methods not essentially unlike those of Robinson.

"Whether or not the Thomson so-called lap-welding invention should be regarded as an absolute anticipation of the Harmatta patent, we think the state of the art to which we have referred left no room for invention in Harmatta. . . . We see no distinction upon principle between plane-face welding and lap-welding; the former certainly embraces the latter. If Thomson's roller electrode device was capable of welding a line or seam in a metal lap joint, it was readily adaptable to line-welding together coterminous plane-face plates. . . . We think Thomson's lap-welding invention was in essence a welding in points. In fact, his line seam was merely a succession of adjoining points. . . . It satisfactorily appears that, although Thomson's roller electrodes in the form shown in the patent were not practicably adapted to commercial spot-welding as disclosed by the Harmatta patent, they could readily be made to do such spot-

welding by the use of suitable projections upon the face of the rolls (Thomson later did spot-soldering by the use of such projections); and assuming that pin electrodes were essential to successful commercial spot-welding, that form of electrodes was old, as illustrated by Thomson's electric soldering patent. . . . In our opinion the art of soldering is analogous to that of welding. . . . By the use of enough more heat Thomson's soldering device could readily have effected spot-welding. . . . No essential difference in principle between heating at points and heating in spots is apparent. Projection welding partakes, though not in so pronounced a sense, of the nature of spot-welding. . . . We agree with Judge Dodge [227 Fed. 428] that Harmatta's idea of 'making his electric welds small in area rather than large in comparison with the areas of the opposed surface to be joined and isolating them, so as to leave each surrounded by a comparatively large area of unwelded surface,' does not involve invention in view of the prior art. In other words, given the desire for a welding in spots, naturally enough suggested by the prior art and by its commercial development, we think Harmatta's specific application of the principles of that prior art involved only the skill of the expert mechanic. Not only every principle, but every electric and mechanical process, involved in the Harmatta claims, was well known in the prior or directly analogous arts, or in mechanical arts generally. We cannot think, in view of the prior art, that invention is to be found in the considerations, separately or collectively, that in Harmatta no bodily movement of the sheets is required, that the current is localized and pressure exerted solely by the electrodes, or by the difference in the form of the electrodes, or by the difference in amount of extruded metal, as compared with some of the earlier applications of resistance welding. Although invention is not necessarily negated by the fact that each element of the

combination is old, the question of fact whether the combination itself involves invention in view of the prior art is always present.

"Our conclusion of noninvention, based upon a review of the prior art, is materially strengthened by the serious doubt whether Harmatta thought, when he filed his patent application, that he had patentably invented anything by the disclosure of spot-welding, as a process or product distinct from point-welding or line-welding, as well as by the fact that others previous to the grant to Harmatta, and apparently in ignorance of Harmatta's claimed invention, successfully practiced the art of spot-welding. . . .

"The patent issued nine years after the application was filed, and after numerous vicissitudes and amendments (including the entire elimination of the roller-electrode feature), and after the application had been placed in interference with the claims of Adolph Rietzel, to whom a patent had previously been issued on July 20, 1909. . . . From the beginning Rietzel's application was owned by plaintiff's predecessor. The interference was declared in favor of Harmatta, for Rietzel's failure, as the junior party to the interference, to take testimony in support of his claim of priority; plaintiff's predecessor at the time owning both the Harmatta application and the Rietzel patent.² . . . But the fact that the award of priority was not based upon an adjudication on the merits tends to weaken its force. It, however, convincingly appears . . . that in 1898 (and about five years before Harmatta's application) Rietzel, while in the employ of plaintiff's predecessor, in several instances successfully joined two pieces of lapped metal at isolated spots by means of a Thomson butt-welding machine; the

² The proceedings in the Patent Office are set forth at length in the opinion of the District Court (pp. 855 *et seq.*).

sheets of metal being united by pressing them together and at the same time passing the heating current from one electrode (or so-called contact) to the opposite electrode, at the selected spot on the meeting surface of the plates, the spots being restricted in area, so as to leave well-defined and comparatively extensive areas of no-union completely surrounding the spots—one of the electrodes or contacts used being of standard size and form, the other being reduced by cutting down to a diameter of about three-eighths of an inch. . . . Rietzel's experience strongly discredits inventive quality in what Harmatta did several years later, including his disclosure of the use of pin-electrodes. The fact also appears . . . that at various times, ranging from two years to five or six years, before the issue of the Harmatta patent, and apparently in ignorance of his asserted invention, various manufacturers put out or used spot-welding machines with commercial success. . . . These experiences also tend to discredit invention in Harmatta. It follows, in our opinion, from what has been said, that the effect of the great commercial success of the Harmatta invention in the hands of plaintiff is entitled to little weight upon the question of the invention, even were that question otherwise in doubt, which we think it is not." (pp. 682 *et seq.*).

The opinion of the Circuit Court of Appeals for the First Circuit, on the other hand, contains only general allusions to the prior art and no analysis of the prior patents. While, in considering the defense of anticipation, it is said that the soldering art was remote, the only statement in the opinion bearing directly upon the defense of want of invention, is that "in view of the further proposition that the presumptions in favor of the patent are so far supported in this case by the insistency of the defense, and the comparatively enormous expense involved in maintaining it, we cannot question the present

Statement of the Case.

265 U. S.

validity of the patent with reference to all propositions involved in the word 'patentability'". (p. 436.)

The conclusion of fact reached by the Circuit Court of Appeals for the Sixth Circuit, as set forth in its opinion, that in the light of the prior art Harmatta's improvement was lacking in invention, commends itself to our judgment. It involves no error in law. Therefore, without considering the other defenses presented, the decree of that court is

Affirmed.
